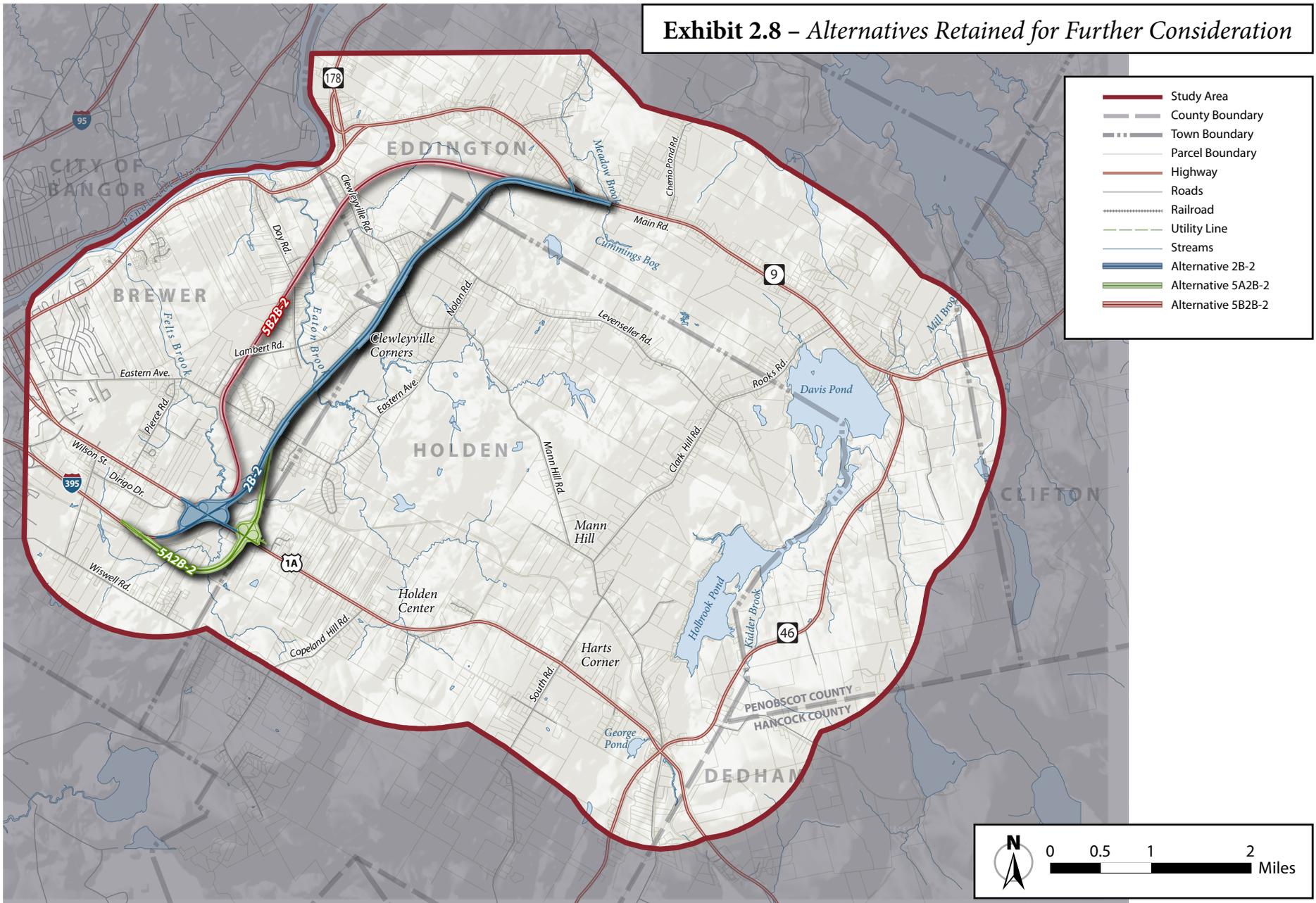


Exhibit 2.8 – Alternatives Retained for Further Consideration



## **2 · I-395/Route 9 Transportation Study Environmental Impact Statement**

### **Exhibit 2.9 – Design Criteria**

<b>Element</b>	<b>Build Alternatives</b>
Type of Roadway	Freeways
Design Speed	70 mph
Posted Speed	55 mph
Terrain	Level
Lane Width	12 feet
Shoulder Width	8 feet
Cross Slopes	6.0% Maximum Superelevation 2.1% Normal 4.2% Shoulder – Normal
Clear Zone	Variable. Dependent on design speed, traffic volume, and side slopes
Side Slopes Cut	Front slope at 6:1 Back slope at 2:1
Fill	6:1 / 4:1 (hinged); 2:1 and guardrail when the embankment height is greater than 20 feet
Minimum Stopping Sight Distance	850 feet
Maximum Degree of Curvature	2°45'
Vertical Grades	3% Maximum 0.25% Minimum Desirable 0% Minimum
Minimum Vertical Clearance	16 feet 6 inches over roads 23 feet 6 inches over railroads
Superelevation Transition Length	250 feet

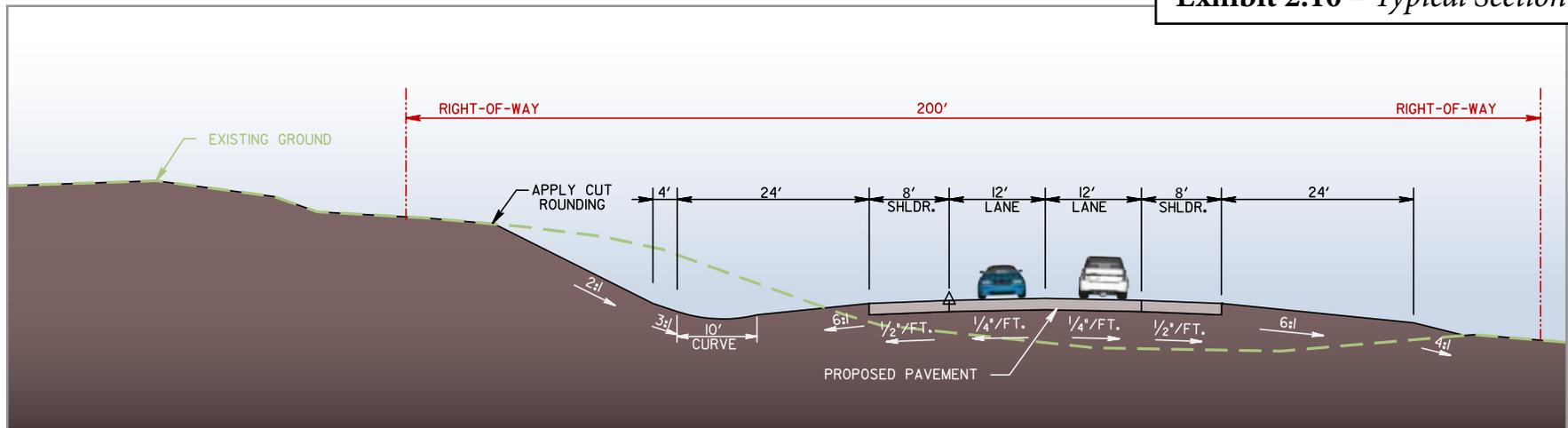
*Sources: American Association of State and Highway Transportation Officials, "A Policy on Geometric Design of Highways and Streets", 5th edition, November 2004; and the MaineDOT Highway Design Guide, 1994.*

continued at its present level; and the intersection of Routes 46 and 9 would be improved.

Improvements to this intersection were conceptually designed to have additional through-travel and turn lanes. The improvements to this intersection could be accomplished within the existing rights-of-way of Routes 9 and 46 with no impact to the natural and social features adjacent to the intersection. The MaineDOT is committed to improving the intersection of Route 9 and Route 46; given the future need (exhibit 2.2) and the limited scope of the improvements to the intersection, the improvements will be added to future work plans for MaineDOT.

Although the No-Build Alternative does not satisfy the study's purpose and needs or the USACE's basic purpose, it is retained for detailed analysis to allow equal comparison to the build alternatives and to help decision makers understand the ramifications of taking no action. The impacts of the No-Build Alternative were fully developed for design year 2035 to demonstrate the full impact of taking no action. Comparing the build alternatives with the current and future No-Build Alternative is essential for measuring the true benefits and adverse impacts of the build alternatives considered in detail.

Exhibit 2.10 – Typical Section



**2.3.2 Alternative 2B-2**

Alternative 2B-2 would continue north from the I-395 interchange with Route 1A, roughly paralleling the Brewer/Holden town line, and connect with Route 9 west of Chemo Pond Road (exhibit 2.11). Route 9 would not be widened to four lanes. The existing I-395/Route 1A interchange would be used (to the extent possible) and expanded to become a semidirectional interchange (exhibit 2.12). A semidirectional interchange reduces left turns and cross traffic; the only traffic movement that would require a left turn would be Route 1A south to Alternative 2B-2 north. The land required for the northern portion of the interchange is owned by the State of Maine.

Alternative 2B-2 would bridge over Felts Brook in two locations at the I-395 interchange. It would pass underneath Eastern Avenue between Woodridge Road

and Brian Drive. Alternative 2B-2 would bridge over Eaton Brook, bridge over Lambert Road, pass underneath Mann Hill Road, and bridge over Levenseller Road connecting to Route 9 at a “T” intersection (exhibit 2.13). Route 9 eastbound would be controlled with a stop sign.

Alternative 2B-2 would further the study’s purpose and satisfy the system-linkage need in the near term (before 2035). Alternative 2B-2 would be a controlled-access highway and conceptually designed using the MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved, and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the

# 2 · I-395/Route 9 Transportation Study Environmental Impact Statement

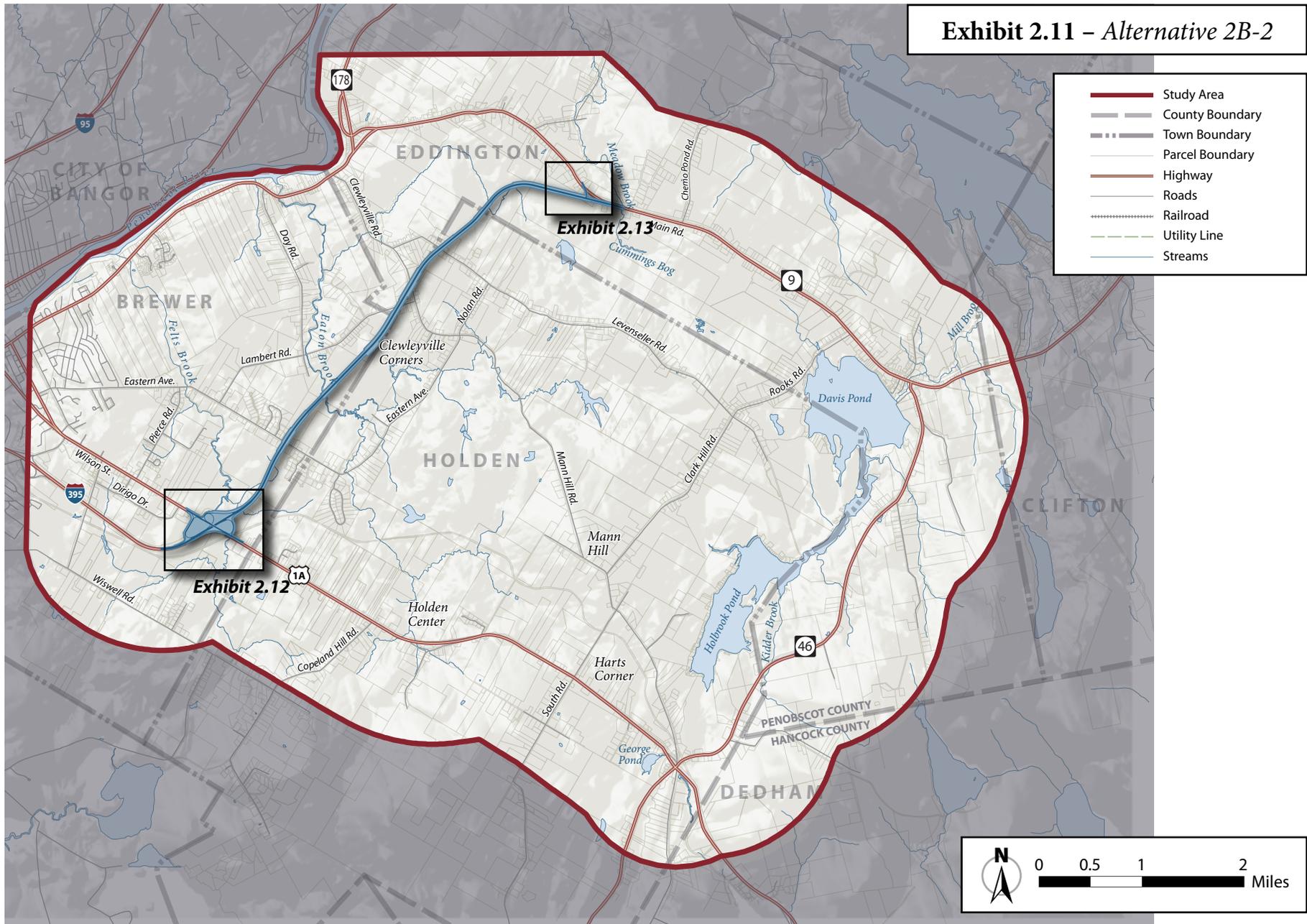
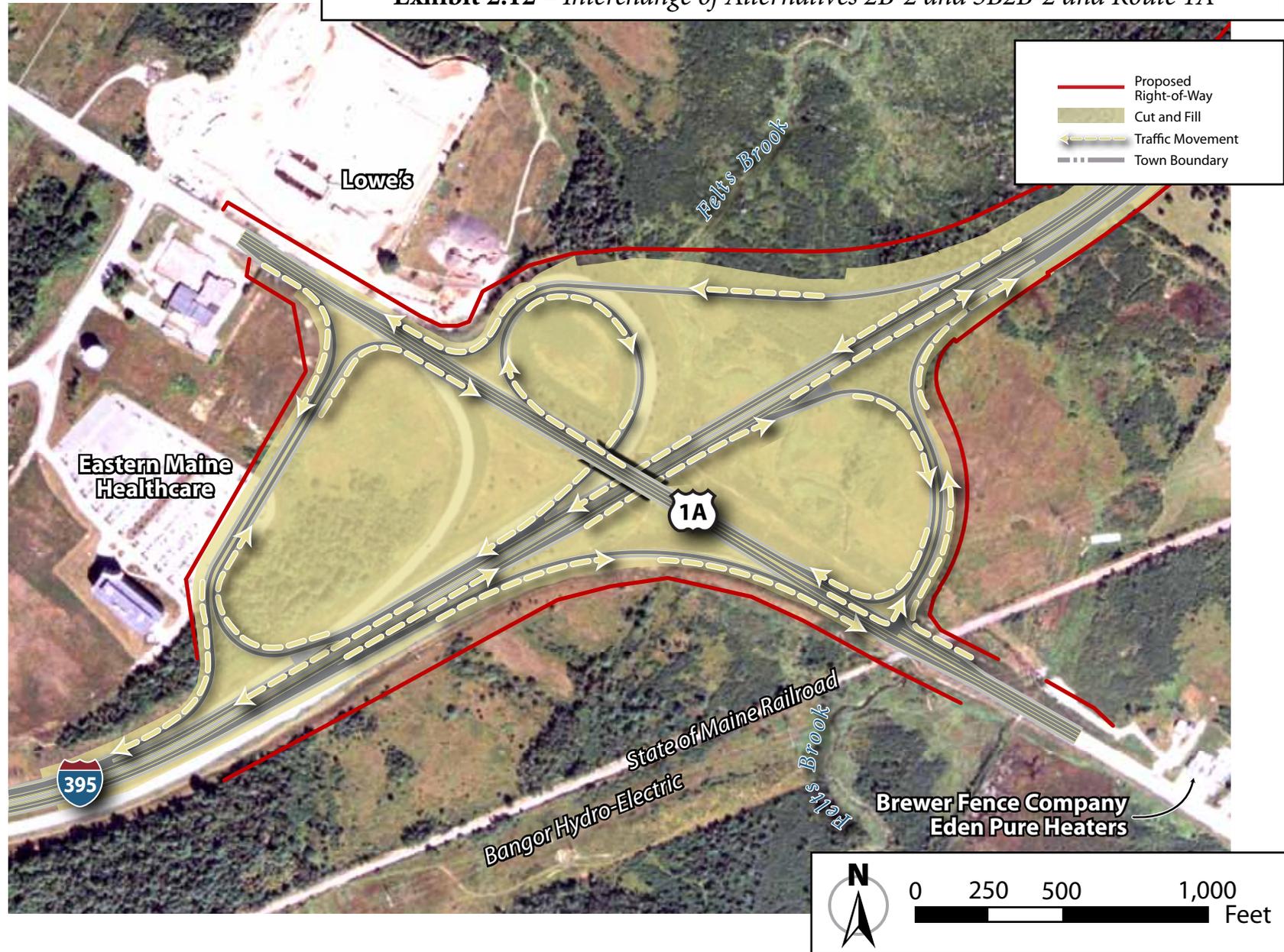
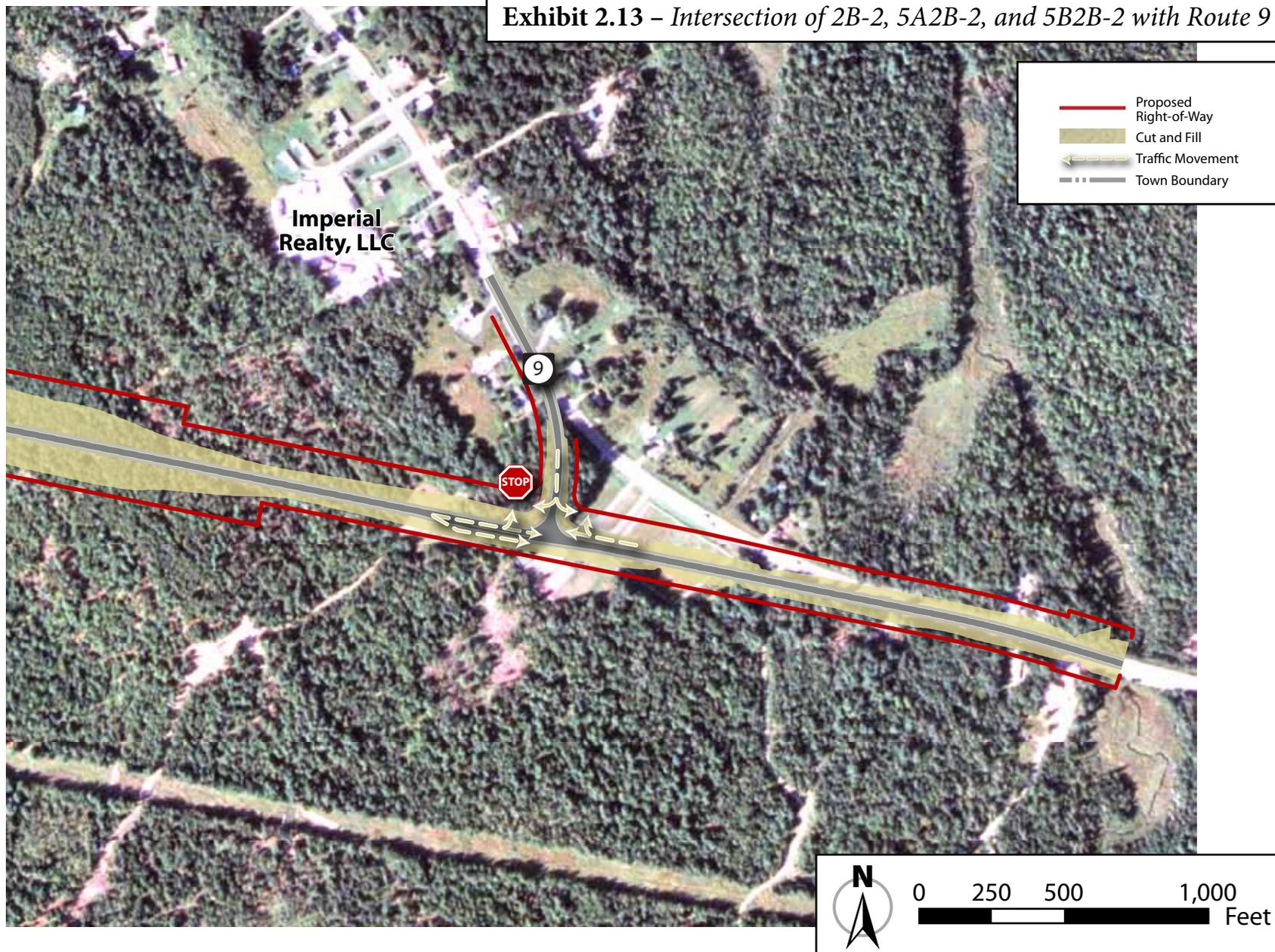


Exhibit 2.12 – Interchange of Alternatives 2B-2 and 5B2B-2 and Route 1A



**Exhibit 2.13 – Intersection of 2B-2, 5A2B-2, and 5B2B-2 with Route 9**



study need related to traffic congestion and safety. It would satisfy the USACE's basic purpose statement.

### **2.3.3 Alternative 5A2B-2**

Alternative 5A2B-2 would start from I-395 for approximately one mile along the southern side of Route 1A in the town of Holden before turning northward, crossing over Route 1A, and paralleling the Bangor Hydro-Electric Company utility easement and connect with Route 9 west of Chemo Pond Road (exhibit 2.14). Route 9 would not be widened to four lanes. Alternative 5A2B-2 would connect to Route 1A with a modified-diamond interchange (exhibit 2.15), which would provide all traffic movements and require two left turns across traffic. A left-turn lane would be provided on Route 1A to 5A2B-2 north. The modified diamond-interchange design would reduce the amount of property that must be acquired. It would connect to Route 9 at a "T" intersection (exhibit 2.13). Route 9 eastbound would be controlled with a stop sign.

Alternative 5A2B-2 would further the study's purpose and satisfy the system-linkage need, in the near term. Alternative 5A2B-2 would be a controlled-access highway and conceptually designed using the MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved, and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the study need related to traffic congestion and safety. It would satisfy the USACE's basic purpose statement.

Alternative 5A2B-2 would require the construction of a new interchange at I-395 and Route 1A in a location with poor soils and the existing interchange would need to be removed. The railroad crossings would be grade separated.

### **2.3.4 Alternative 5B2B-2**

Alternative 5B2B-2 would continue north from the I-395 interchange with Route 1A before turning east and connecting with Route 9 west of Chemo Pond Road (exhibit 2.16). Route 9 would not be widened to four lanes. The existing I-395/Route 1A interchange would be used (to the extent possible) and expanded to become a semidirectional interchange (exhibit 2.12). The only traffic movement that would require a left turn would be Route 1A south to Alternative 5B2B-2 north. This interchange would require more land than a diamond interchange. The land required for the northern portion of the interchange is owned by the State of Maine.

Alternative 5B2B-2 would bridge over Felts Brook in two locations at the I-395 interchange. It would bridge over Eastern Avenue to the immediate east

# 2 • I-395/Route 9 Transportation Study Environmental Impact Statement

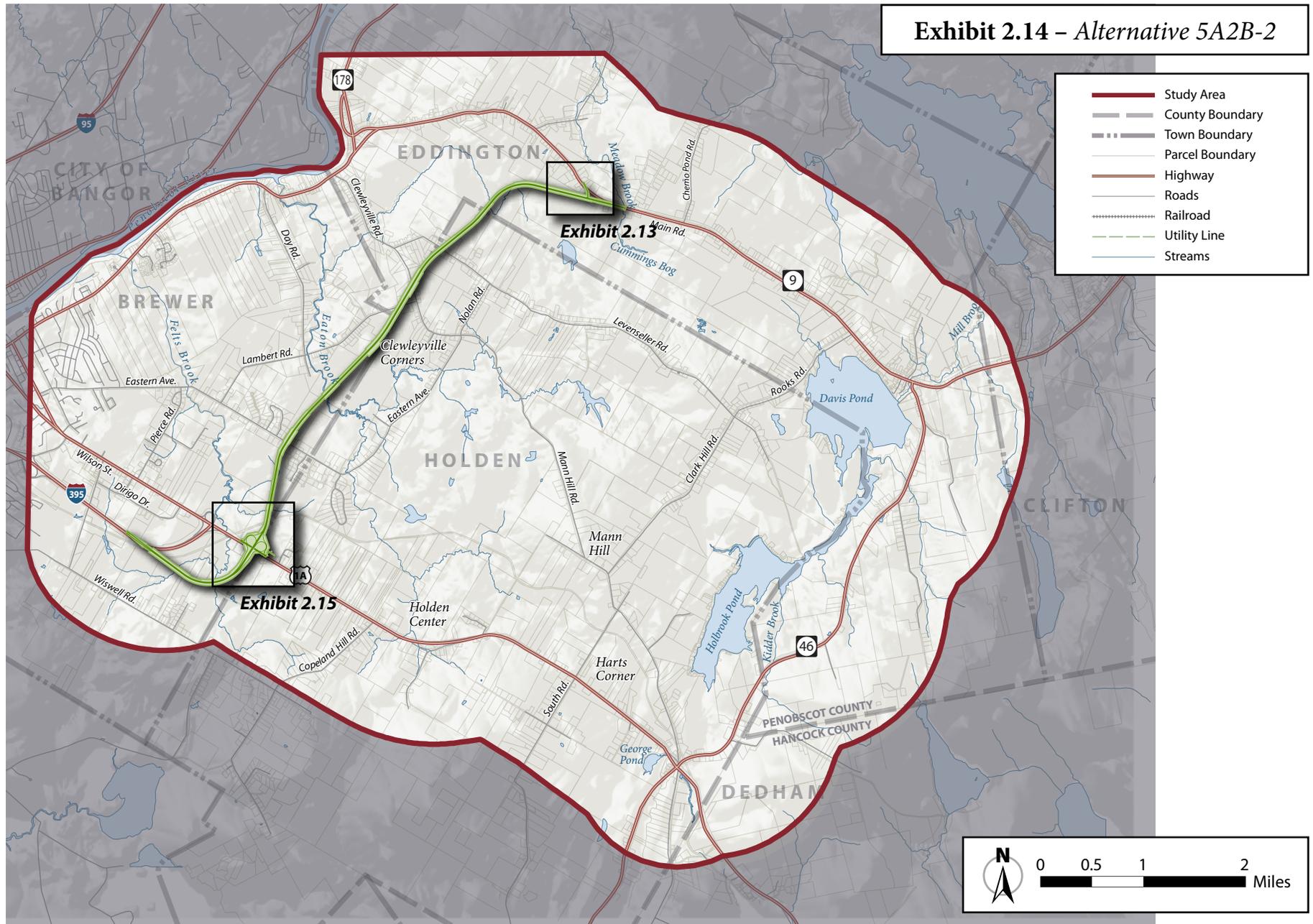
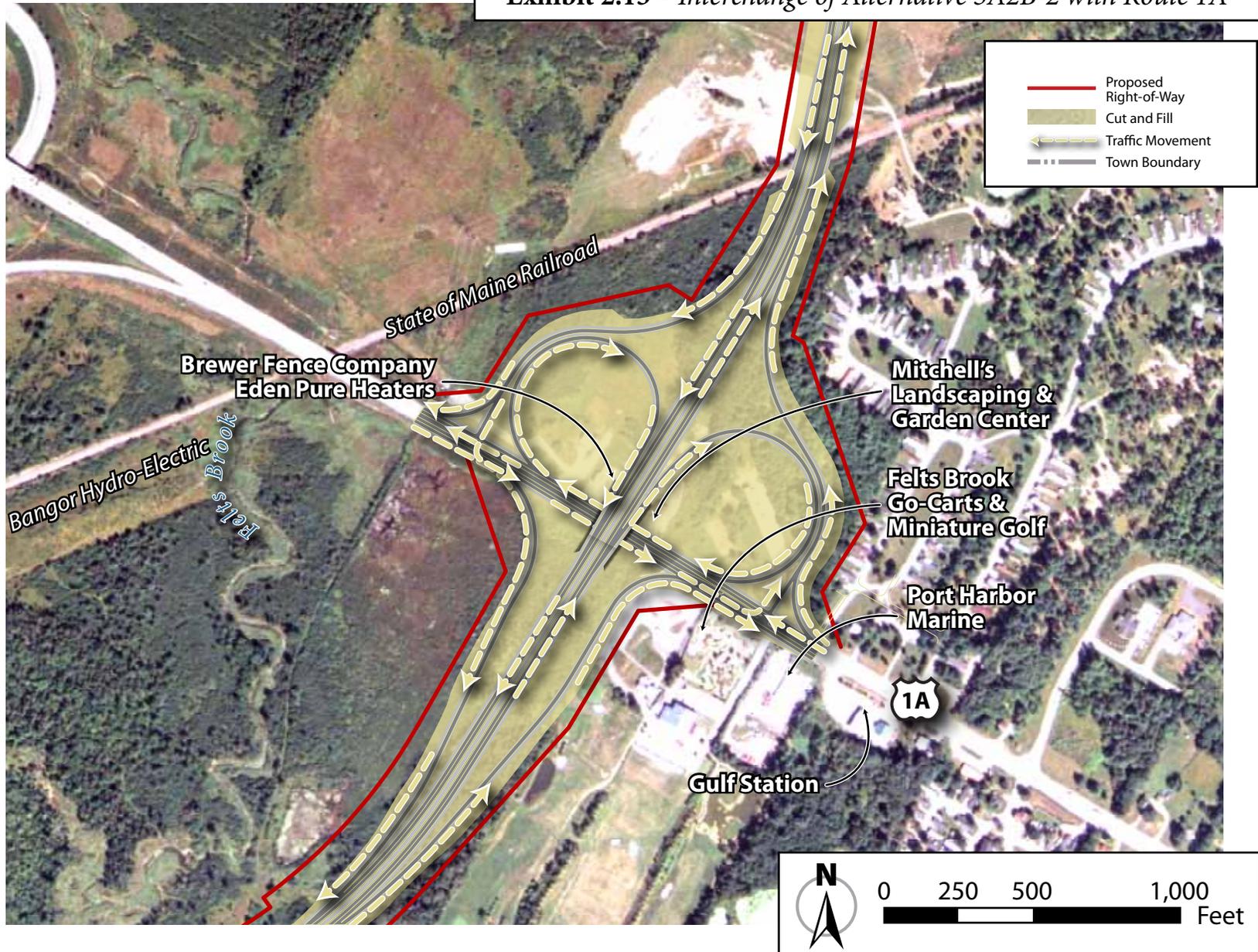
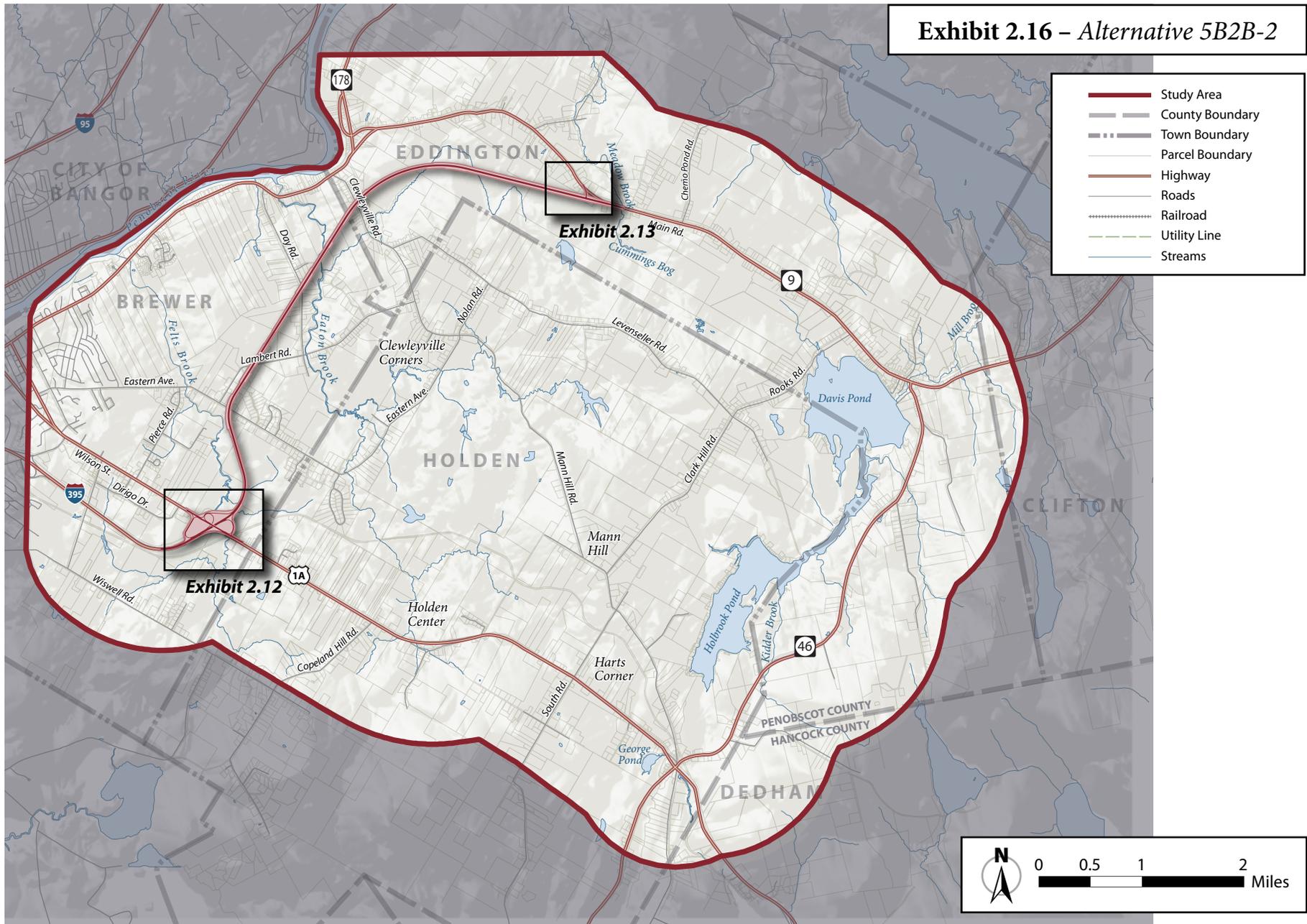


Exhibit 2.15 – Interchange of Alternative 5A2B-2 with Route 1A



# 2 • I-395/Route 9 Transportation Study Environmental Impact Statement



of Lambert Road and bridge over Lambert Road. It would pass under Day Road and Chewleyville Road before turning east and connecting to Route 9 at a “T” intersection (exhibit 2.13). Route 9 eastbound would be controlled with a stop sign.

Alternative 5B2B-2 would further the study’s purpose and satisfy the system-linkage need in the near term (before 2035). Alternative 5B2B-2 would be a controlled-access highway and conceptually designed using the MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved, and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the study need related to traffic congestion and safety. It would satisfy the USACE’s basic purpose statement.

## **2.4 Other Activities Necessary to Construct the Preferred Alternative and Estimated Construction Cost**

Each build alternative would require preliminary and final engineering design, acquisition of property, and relocation of utilities prior to construction.

### ***2.4.1 Property to Be Acquired for Each Build Alternative***

The conceptual design of the build alternatives included an estimation of land that would need to be acquired and used as a right-of-way for the two-lane highway. The proposed right-of-way width for the build alternatives would be the minimum necessary to accommodate a two-lane highway and averages approximately 200 feet. The limits of the proposed right-of-way are irregular because they are a function of topography, earth-moving activities (i.e., cutting and filling), slopes, existing property boundaries, viability of remaining portions of properties acquired, and continued access to individual properties. The amount of land to be acquired for the construction and operation of the build alternatives was minimized wherever possible.

A preliminary assessment was performed to provide a general understanding of existing properties and ownership and the extent of potential land to be

acquired and used for right-of-ways to construct and maintain the build alternatives. Information was collected from aerial photography and property records from the city of Brewer and the towns of Holden, Eddington, and Clifton. Through analysis of property data, discussions with local officials, and observations, potentially impacted properties within the proposed right-of-ways for each build alternative were identified and quantified. The build alternatives would directly impact from 44 to 70 properties. The area to be acquired and used for right-of-way for the build alternatives ranges from 169 to 211 acres (exhibit 2.17).

**2.4.2 Utilities to Be Relocated**

The build alternatives were designed to avoid and minimize the impact and relocation of utilities. Construction of the build alternatives would impact electric, telephone, cable television, water, and sewer utilities.

A preliminary assessment of potential impacts of the build alternatives to utilities and their required relocations was performed. Information on utilities was collected from field inspection, interviews with utility owners and representatives, review of utility records and designs, property maps, and aerial photography.

Individual utility companies would be responsible for the cost of relocating utilities inside the rights-of-way of state roads. The MaineDOT would be responsible for the cost of relocating utilities located outside the right-of-ways of state roads.

**2.4.3 Estimated Construction Costs**

As part of the conceptual design of the build alternatives, a preliminary estimate of the cost to construct them was prepared (in 2011 dollars). The cost to construct the build alternatives ranges from \$61 million to \$81 million.

The MaineDOT and the FHWA preliminarily considered tolling as one method of partially financing

**Exhibit 2.17 – Summary of Property to Be Acquired**

<i>Alternative</i>	<i>Displacements</i>			<i>Number of Affected Properties</i>	<i>Area to be Acquired (acres)</i>
	<i>Residential</i>	<i>Commercial</i>	<i>Utility</i>		
<b>No-Build</b>	-	-	-	-	-
<b>2B-2/the Preferred Alternative</b>	8	-	-	54	174
<b>5A2B-2</b>	15	4	-	70	211
<b>5B2B-2</b>	6	-	2	44	169

*Note: in 2011 dollars*

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Section 404 requires a permit from the USACE before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from regulation (e.g., certain farming and forestry activities). The Section 404(b)(1) guidelines provide guidance to the Corps for issuing permits; compliance with the 404(b)(1) guidelines is required for the issuance of a permit. The Section 404(b)(1) guidelines require the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). Critical to the selection of the LEDPA is the recognition of the full range of alternatives and impacts in determining first, which alternatives are (1) practicable, and (2) environmentally less damaging.

the operation and maintenance costs of a build alternative. The MaineDOT and the Maine Turnpike Authority considered the feasibility of tolling the build alternatives to determine if tolling could generate sufficient revenue to (1) cover the construction, operations, and maintenance costs of a toll facility; and (2) provide funding to supplement the operations and maintenance costs of the build alternatives, if one is

selected and advanced to construction. Tolling would not be used to supplement the funding for construction of one of the build alternatives due to the low traffic volumes (HNTB, 2010).

The analysis considered two basic types of tolling facilities: a traditional barrier tolling facility (e.g., the York toll plaza in York, Maine) and an open-road tolling facility (e.g., the Hampton toll plaza in Hampton, New Hampshire). The analysis included the following toll schedule:

- Passenger-car cash toll rate would be \$1.00 in the opening year
- Heavy-truck cash toll rate would be four times the passenger-car cash toll rate
- E-ZPass rates would be discounted 10 percent off the cash rate
- Commuter rates would be discounted 50 percent off the cash rate
- Toll increases would occur every five years at an annual inflation rate of 2.7 percent
- Toll rates for cash-paying vehicles would be rounded to the nearest \$0.05

The analysis concluded that a traditional barrier tolling facility could generate revenue to cover the costs associated with the construction, operations, and maintenance costs of a toll facility and generate

approximately \$155,000 annually (in 2011 dollars) to supplement the operations and maintenance costs of one of the build alternatives. The analysis further concluded that an open-road toll facility would not generate enough revenue to cover the construction, operations, and maintenance costs of a toll facility (HNTB, 2010).

Due to the small amount of revenue generated from a toll facility in comparison to the estimated cost of construction, the MaineDOT and the FHWA are not considering tolling as a method of partially financing the operation and maintenance costs of a build alternative, if one is selected and advanced to construction.

### **2.5 Next Steps If a Build Alternative Is to Be Constructed**

The MaineDOT and the FHWA have prepared a permit application in accordance with Section 404 of the CWA for the range of alternatives retained for further consideration and it has been submitted to the USACE. A copy of this Section 404 permit application is contained in Appendix E, and is supported by information throughout this EIS.

If the No-Build Alternative is selected, the MaineDOT and the FHWA would continue to work with local and regional authorities to maintain (to the extent possible) the safety and efficiency of I-395 and the state roads in the study area.

The USACE identifies the LEDPA following its review of the permit application and completion of its public-interest finding.

If a build alternative is selected for construction — through completion of a FEIS, filing of a ROD by the FHWA, and the USACE determination of the LEDPA and issuance of a Section 404 permit — the MaineDOT would work with the affected municipalities to develop a plan to protect the corridor of the preferred alternative from further development. Methods to protect the corridor include development of zoning and local ordinances and selective acquisition of properties as they become available for sale or at risk for further development. The MaineDOT may fund these property acquisitions through its customary programming of state and federal highway-funding mechanisms. Property acquisitions and residential and business relocations would be in accordance with appropriate state and federal laws relevant to acquisition of property for highway purposes.

Once the MaineDOT has a corridor-protection system in place, it would work to develop support for a funding plan. In recent years, many states have found that state highway funds, bonding, and federal core apportionments are needed to maintain the transportation system as it exists, with little in additional funds for new capacity projects. Therefore, the MaineDOT would work with the Governor, region, and state and

federal legislators to devise funding strategies for the full property acquisition and ultimate construction of the selected build alternative.

The MaineDOT would work with the town of Eddington to maintain the safety and preserve the capacity of Route 9 in the study area. The range of possible activities that could be considered to maintain the safety and preserve the capacity of Route 9, in accordance with Maine's rules governing access management, are working with the town of Eddington to change zoning, eliminating existing and future curb cuts, and working with individual landowners to acquire property or development rights.

The acquisition of property for a right-of-way for corridor preservation could begin shortly after the NEPA/Section 404 process is completed. It would take several years to finalize the engineering design before construction can begin. Construction is not anticipated to begin until 2014.

During final design, the MaineDOT would continue to refine the alignment and its right-of-way within the preferred corridor to further avoid and minimize impacts to the natural, social, and economic environments and to coordinate with those that are affected.

In addition to construction and operation of the preferred alternative, the MaineDOT is committed to improving the most heavily congested section of

Route 1A from I-395 to Route 46 and the intersection of Routes 46 and 9.

## **2.6 Most Essential Differences among the Alternatives to Be Considered in Decision Making**

Distinct differences exist in the potential direct and indirect impacts from the build alternatives (exhibit 2.18). They help to define the alternatives and assist the MaineDOT and the FHWA in choosing the preferred alternative. A full accounting of the direct, indirect, and cumulative impacts from the No-Build Alternative and the build alternatives to the natural, social, cultural, and economic environments is in Chapter 3.

## 2 · I-395/Route 9 Transportation Study Environmental Impact Statement

Exhibit 2.18 – Direct Impacts of Alternatives

Alternatives	Physical and Biological														Land Use												
	Wetlands (acres) Roadway contaminants within 100 feet <sup>1</sup> (acres) Roadway contaminants within 160 feet <sup>2</sup> (acres)			Streams				Floodplains (acres) Vernal pools <sup>3</sup> /dispersal habitat (acres) Waterfowl and wading bird habitat <sup>4</sup> (acres)			Deer-wintering areas (acres)		Endangered Species		Vegetation (acres)		Undeveloped habitat		Area to be acquired (acres)		Historic Properties		Residential displacements <sup>5</sup>		Business displacements <sup>6</sup>		Business impacts <sup>7</sup>
				Bridges and culverts/feet	Roadway contaminants within 100 feet <sup>1</sup> (acres)	Roadway contaminants within 160 feet <sup>2</sup> (acres)	Sediments within 3,300 feet <sup>2</sup> (acres)														4(f) Properties	Residential displacements <sup>5</sup>	Business displacements <sup>6</sup>	Business impacts <sup>7</sup>			
<b>No-Build</b>	-	17	64	-	0.3 ac. (17,000 sq. ft.)	0.7 ac. (29,000 sq. ft.)	12 ac.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>2B-2/the Preferred Alternative</b>	26	31	66	5 bridges 3 culverts/ 554 feet	0.9 ac. (39,100 sq. ft.)	1.8 ac. (78,300 sq. ft.)	13 ac.	10	1/15	9 acres along Eaton Brook and its tributaries	-	Yes	102	Eliminates two blocks; fragments three blocks	163	No	No	8	-	-	-	-	-	-	-	-	Eastern Maine Healthcare parking lot – 130 parking spaces (20 percent)
<b>5A2B-2</b>	31	34	71	5 bridges 3 culverts/ 567 feet	0.6 ac. (24,300 sq. ft.)	1.5 ac. (63,000 sq. ft.)	18 ac.	2	1/23	20 acres along Felts Brook and 9 acres along Eaton Brook	-	Yes	136	Eliminates two blocks; fragments four blocks	215	No	No	15	Brewer Fence Company, Eden Pure Heaters, Mitchell's Landscaping and Garden Center, Town 'N Country Apartments	-	-	-	-	-	-	-	
<b>5B2B-2</b>	32	30	80	6 bridges 1 culvert/ 222 feet	1.0 ac. (43,700 sq. ft.)	2 ac. (90,000 sq. ft.)	17 ac.	11	1/6	3 acres along a tributary to Eaton Brook	3 acres along a tributary to Eaton Brook	Yes	102	Fragments four blocks	186	No	No	6	Bangor Hydro-Electric Co. Building, Maritimes and Northeast Pipeline Compressor Station	-	-	-	-	-	-	Eastern Maine Healthcare parking lot – 130 parking spaces (20 percent)	

**Notes:**

Primary road contaminants are salt and lead.

No-Build Alternative consisted of Route 1A from I-395 to Route 46, and Route 46 from Route 1A to Route 9.

<sup>1</sup>Source: USACE New England District, "Compensatory Mitigation Guidance", 2010.

<sup>2</sup>Source: Maine Audubon Society, "Conserving Wildlife On and Around Maine's Roads", 2007.

<sup>3</sup>All vernal pools are insignificant.

<sup>4</sup>Upland habitat within 250 ft.

<sup>5</sup>The taking of a residence

<sup>6</sup>The taking of a business

<sup>7</sup>An impact to the business without the taking of the business